

Description

VERTICALLY DRAINING CONTAINER HAVING OFF- SURFACE LIP

BACKGROUND OF INVENTION

[0001] This invention relates to a container that can be placed in an inverted position so that liquid contents within the container will drain out but the lip of the container will not contact the surface upon which the container rests. In particular, it relates to a container having at least one projection that supports the container in a vertical position when it is inverted so that the lip of the container is off the surface.

[0002]

SUMMARY OF INVENTION

[0003] After cups, glasses, and other containers have been emptied and washed they are turned upside-down (inverted) and placed on a horizontal surface. This inverted position permits liquid in the container to drain out and keeps dust, bugs, and other things from falling into the container. However, since the lip of the container contacts the surface upon which the container rests, substances on that surface may adhere to the lip. If the container is a glass or a cup used for drinking, then these substances may be ingested by a person drinking from it. This

can be especially important when the cup is used in a laboratory or an industrial facility, where toxic materials may be on the surface. Even if the container is not used for drinking it may still be desirable to keep lip off the surface to prevent materials on the surface from entering the container.

[0004] Japanese Patent 2,955,852B shows a cup having a handle that can support the cup so that the walls of the cup are at an angle to a horizontal surface. Liquid in the cup drains out and the lip of the cup does not touch the surface. However, the force due to gravity that moves liquids down along the inside of the cup is reduced due to the angle and, if that force is less than the frictional and surface tension forces between the liquid and the cup, some of the liquid will remain in the cup. This is especially true when the liquid is viscous.

BRIEF DESCRIPTION OF DRAWINGS

[0005] Figure 1 is an isometric view of a cup according to this invention in an upright position.

[0006] Figure 2 is a side view of the cup of Figure 1 resting on a horizontal surface in an inverted position.

[0007] Figure 3 is an isometric view of a cup according to this invention that is similar to the cup shown in Figure 1, but has a projection opposite the handle.

[0008] Figure 4 is an isometric view of a cup according to this invention having three projections extending upward from the lip.

[0009] Figure 5 is an isometric view of a cup according to this invention that has a projection that extends over half way around the lip.

[0010] Figure 6 is an isometric view of a cup according to this invention that has two opposing projections from the lip.

[0011] Figure 7 is an isometric view of a glass according to this invention that has two opposing projections from the lip.

[0012] Figure 8 is an isometric view of a glass according to this invention that has a projection that extends over half way around the lip.

[0013] Figure 9 is an isometric view of a glass according to this invention that has three projections extending from the lip.

[0014] Figure 10 is an isometric view of a cup having an aperture in the base of the handle for holding a toothbrush.

[0015]

DETAILED DESCRIPTION

[0016]

In Figures 1 and 2, cup 1 is in an upright position and rests on horizontal surface 2. Cup 1 has base 3 and cylindrical sides 4 that are parallel to vertical centerline 5. Cup 1 is fitted with handle 6 which forms aperture 7 with sides 4 so that cup 1 can be easily grasped. At the top of handle 6 is fixed horizontal plate 8, the top surface of which is higher than the top of lip 9. When cup 1 is inverted (see Figure 2), cup 1 rests on horizontal plate 8 so that lip 9 of cup 1 does not contact surface 2.

To prevent cup 1 from tipping when it is in an inverted position, handle

6 is sufficiently heavy so that the center of gravity of cup 1 is over plate 8. This can be accomplished by making handle 6 of greater volume than the remainder of cup 1 if they are both made of the same material, or handle 6 can be made of, or contain, a denser material than the remainder of cup 1. Because sides 4 of cup 1 are vertical (i.e., they are at a 90° angle to horizontal surface 2), liquid within cup 1 will drain more completely than if sides 4 were at a lesser angle to surface 2.

[0017] In Figure 3, cup 10 has a handle 11 to which is fixed horizontal plate 12. However, when cup 10 is inverted, the center of gravity of cup 10 is not over plate 12 so, to prevent cup 10 from tipping, it is provided with a projection 13 that extends above lip 14 to the same level as the top surface of plate 12.

[0018] In Figure 4, cup 15, having handle 16, is provided with three projections 17 which support cup 15 in a vertical position and prevent lip 18 from contacting a surface when cup 15 is inverted. If a diameter of cup 15 that extends in the direction of the center of handle 16 is the x-axis and the y-axis passes through centerline 19 of cup 15, then projections 17 could be at angles of about 90°, 185°, and 355° for a right-handed person and at angles of about 5°, 175°, and 270° for a left-handed person.

[0019] In Figure 5, cup 20 has handle 21 and a single projection 22 that extends vertically upward from lip 23 more than half way around cup 20. Projection 22 preferably extends about 185 to about 270° around lip 23. Projection 22 supports cup 20 in a vertical position when it is

inverted. Cup 20 would be used by a right-handed person, but by placing projection 22 on the opposite side it could be used by a left-handed person.

[0020] In Figure 6, a cup 24 has a handle 25 and two opposing projections 26 that extend the same distance above lip 27 of cup 24. Each projection 26 preferably covers an angle from the centerline of cup 24 of about 10 to about 30°. When cup 24 is inverted and rests on a horizontal surface, it is supported by projections 26 so that lip 27 does not contact the surface.

[0021] In Figure 7, a glass 28 has a lip 29 with two opposing elevated projections 30 that support the glass when it rests on a horizontal surface in an inverted position so that lip 29 does not contact the surface. Each projection 30 preferably covers an angle from the centerline of the cup of about 10 to about 30°.

[0022] In Figure 8, a glass 31 has a single projection 32 that extends vertically upward from lip 33 more than half way around glass 31. Projection 32 preferably extends about 185 to about 270° around lip 33. Projection 32 supports glass 31 in a vertical position when it is inverted. Glass 31 would be used by a right-handed person, but by placing projection 32 on the opposite side it could be used by a left-handed person.

[0023]

In Figure 9, glass 34 has three projections 35 which support glass 34 in a vertical position and prevent lip 36 from contacting a surface when glass 34 is inverted. If a diameter of glass 34 that extends across the

center of glass 34 through centerline 37 is the x-axis and the y-axis passes through centerline 37 of glass 34 at 90° to the x-axis, then projections 35 could be at angles of about 90°, 185°, and 355° for a right-handed person and at angles of about 5°, 175°, and 270° for a left-handed person.

[0024] In Figure 10, inverted cup 38 has base 39, lip 40 at its open end, and handle 41. Handle 41 is of sufficient mass so that the center of gravity of cup 38 is above flat top 42 of handle 41 and cup 38 does not tip over when it is inverted. Aperture 43, which can extend completely through handle 41 but preferably extends only partly through it, supports toothbrush 44. The handle of Figure 10 can also be used with other embodiments of this invention, such as those shown in Figures 3 to 6.

[0025] This invention is applicable to any open-ended container including buckets, pails, drums, and vessels, as well as the cups and glasses shown in the drawings. While the containers are preferably circular in cross-section, they can also have other shapes, such as elliptical, square, or rectangular. The container can have the same internal sectional area throughout its length (i.e., it can be cylindrical), but that area could also vary so that it is less or greater near the top.

[0026] The container can be made of any suitable material, including plastic, glass, ceramic, and metal. When the container is inverted and is resting on a horizontal surface the lip is preferably about 1 to about 3 mm away from the surface.